

## Item #8: White-tailed Deer Population

**Evaluation Objectives:** To evaluate the changes in the population status of white-tailed deer and the relationship of population changes to forest management practices.

**Methods:** Population estimates for deer are generated by Montana Fish, Wildlife and Parks (FWP) using a population reconstruction model with the number of deer harvested during the respective hunting season via a phone survey, as well as the buck/doe and fawn/doe ratios in December as input variables. Based on this information, the computer model calculates the number of bucks, does, and fawns in the population and prepares a total population size estimate by hunting district and Fish, Wildlife and Parks (FWP) Region. The model assumes that: (1) the population is relatively stable from year to year (i.e., only small changes in the buck/doe and fawn/doe ratios), and (2) all buck deer mortality is due to harvest. Since these assumptions are not valid in all hunting districts (all populations experience periods of instability and hunter harvest is always only a portion of the total buck mortality that occurs annually), the total population estimate is assigned a confidence interval of plus or minus 20%. Since 1941, the State of Montana has used post-season surveys of licensed hunters and permit holders to estimate wildlife harvest. Results of these surveys are used to develop hunting season regulations, evaluate and develop wildlife management strategies, for wildlife research, for hunt planning by the public, as well as other applications. The models reflect annual results and the FWP can adjust harvest seasons and quotas annually. These models offer a reasonable estimate of long term population trends. This surrogate for population change is appropriate because of the difficulty of estimating populations without a significant scientific rigor, and also of attributing the effects of only one of many variables that influence big game population numbers. Montana FWP's goals for managing the harvest of big game animals include maintaining a sustainable population.

The Flathead National Forest (FNF) encompasses 11 hunting districts for deer and elk (Table 8-1). The percent of National Forest System (NFS) lands within a hunting district runs from a low of 1% (the Flathead River with few parcels of NFS land along the river) to 100% in the wilderness.

**Evaluation:** White-tailed deer monitoring data is reported for the period from 1965 to 2010 (Table 8-2 and Figure 8-1). Table 8-2 displays the numbers of white-tailed deer harvested in hunting districts that occur entirely or partially on the FNF. A statewide estimate of 249,000 white-tailed deer is provided at <http://fwp.mt.gov/hunting/planahunt/huntingGuides/deer.html> (2010 White-tailed Deer Distribution and Population Estimate). White-tailed deer are the most numerous big game species on the FNF with the highest populations in the Tally Lake and Swan Lake Ranger Districts (Figures 8-2 and 8-3). Following the severe winter of 1996-1997, when weather significantly influenced animal survivorship especially young-of-the-year, white-tailed deer harvest numbers dropped by over 60% and the population has slowly increased afterwards. Since these population estimates would be higher than those made in the Forest Plan for only NFS lands, a reduced portion of total harvest for some hunting district (HD) is assumed for population estimates.

The numbers presented here are estimates for all hunting districts except for HD 170 where NFS lands are so limited it makes sense to report only 1% of the harvested population. Previous biologists made an attempt to approximate the amount of NFS lands within each HD but it does not appear that the percentages were used for the harvest estimates table. Even though deer and elk do not know ownership boundaries and move

according to seasonal or behavioral conditions, it's probably logical to use the NFS percentage of the HD to estimate harvest numbers as white tails are widespread on various habitats.

**Table 8-1.** Hunting Districts and Estimated Proportion on NFS Lands.

Hunting District	NFS Lands	Est. Harvest from NFS Lands
102 Tally Lake	53%	75%
110 North Fork	63%	100%
120 Blacktail	14%	50%
130 Swan	63%	75%
131 (dropped 1978)	50%	50%
132 North Swan	49%	50%
140 Lower S. Fork	98%	100%
141 Lower Mid. Fork	98%	100%
150 Upper S. Fork	100%	100%
151 Upper Mid Fork	100%	100%
170 Flathead River	<1%	1%

As seen in the figures below, long-term trend is upward for white-tails. Harvest numbers from 2008-10 have taken a short-term trend downward but are still above the population lows immediately after the winter of 1996-97. In the early 1990s, an annual average of 800 acres was improved primarily for big game. Between 1997 and 2007, an annual average of 1400 acres was improved primarily for big game. From 2008 – 2010 approximately 9,434 acres were improved primarily for big game through burning, weed control, access management and planting. Many acres have been improved with security habitat as the result of grizzly bear access management. This amount of habitat improvement acres for wildlife and threatened and endangered species is well above the (+/-) 200-300 acres estimated annual from the Forest Plan desired condition. In addition to this timber harvest, wildfire and fire use management have created a diversity of habitat conditions generally favorable for big game. Thousands of acres have also been improved for habitat security by grizzly bear access management accomplishments with road decommissioning and motorized vehicle restrictions (see Tables 16b-10 and 16b-11 in item 16.). Additional lands have been protected from development with the acquisition of Plum Creek Timber Company lands with the Montana Legacy Project. The land deal includes all of Plum Creek's remaining holdings in the Swan Valley, about 67,000 acres checkered throughout the 230,000-acre watershed which will be in State and federal public lands.

Determining significant changes between years would be problematic due to flight conditions, weather conditions, vegetation cover, lack of qualified pilots, observer error, and sheer size of big game distribution across the state or even the forest. Mild/severe winters, predation, disease, early snow cover during the harvest, habitat loss due to private land development, and liberalized hunting opportunities also affect the population. The state has the responsibility to annually monitor big game trends, hunter data, and harvest success, in order to regulate the harvest accordingly for sustainable populations. Even though the science is limited in accuracy, these are the best estimates based on decades of experience and research. More reliable estimates of big game populations are unrealistic to achieve without an extremely large amount of financial and personnel commitment. FWP and the Forest Service have a unique partnership to jointly manage wildlife and wildlife habitat. FWP is responsible for protecting, enhancing and regulating the sustainable use of the state's wildlife resources for public benefit now and in the future. FWP manages its wildlife program to balance game damage, human/ wildlife conflicts and landowner/recreations conflicts with the perpetuation

and protection of wildlife populations. FWP provides and supports programs to conserve and enhance Montana's terrestrial ecosystems and the diversity of species inhabiting them, oftentimes in cooperation with the FNF. FWP has the ability to address management issues at the herd or management unit level directly with the forest to address any site specific issues. Forest biologists are in contact with state biologists during forest management project proposals to address issues that may potentially affect big game and often ask or receive technical assistance in project design to benefit or reduce impacts to wildlife habitat.

### Recommended Action

In addition to habitat quality and quantity, many factors other than Forest Service management can influence big game populations. The state has the responsibility to monitor big game and harvest success, and to regulate the harvest accordingly for sustainable populations. The FNF continues to consult with FWP biologists during project proposals to arrive at site specific objectives for the affected habitat. The Forest Service continues to evaluate cover/forage, road density and other relationships for effects analysis at the project level, while addressing the cumulative effects of prescribed burning, wildfire and timber harvest, or fuels reduction for wildland urban interface (WUI) community protection projects. From a Forest Service perspective, measures of FWP harvest/trend statistics, habitat security, access management changes, and acres of habitat improvement are important features of big game management and should be used as surrogates to indirectly estimate the effects of forest management on big game.

**Table 8-2.** Harvest Estimates on Hunting Districts on the Flathead National Forest.

White-tailed Deer	Tally Lake	North Fork	Blacktail	Swan	(Swan)	No. Swan	L So Fork	L. Mid Fork	U. So Fork	U Mid Fork	Flt River	Total
Harvest	102	110	120	130	131	132	140	141	150	151	170	
% HD NFS	~75%	~100%	~50%	~75%	50%	50%	100%	100%	100%	100%	~1%	
1965	787	177		786	107		179		38			2074
1966	990	200	531	866	0		102		19			2708
1967	780	251	540	835	142		115		36			2699
1968	1120	375	664	1151	112		109		45			3576
1969	588	126	356	552	131		90		16			1859
1970	897	183	640	827	72		153		0			2772
1971	875	274	590	861	58		70		17			2745
1972	1075	218	502	622	96		49		26			2588
1973	1100	252	747	906	210		50		25			3290
1974	486	209	290	409	214		128		87			1823
1975	480	175	337	458	177		118		33			1778
1976	482	137	335	424	99		52		55			1584
1977	785	229	434	600	136		135		64			2383
1978	654	211	303	625			74	5	49			1921
1979	852	333	357	612			179	18	86			2437
1980	1014	384	430	742			221	13	40	19		2863
1981	864	298	228	668			157	21	34	4		2274
1982	686	300	331	883			111	24	26	8		2369
1983	874	426	313	897			162	6	26	9		2713
1984	1433	253	347	1091			165	10	16	0	2	3317
1985	1035	368	406	1254			25	11	14	6	3	3152
1986	797	380	351	1265			104	12	40	0	7	2956
1987	1237	543	471	1109			136	17	55	4	7	3579
1988	1342	668	602	1368			115	32	43	0	5	4175
1989	1195	749	694	1804			140	26	31	0	4	4643
1990	1305	628	723	1161		606	132	22	35	15	6	4633
1991	2126	634	720	1168		730	122	4	15	4	8	5531

1992	1919	602	799	1213		603	138	37	41	8	7	5367
1993	1700	421	855	1172		746	94	40	15	4	6	5053
1994	2099	420	915	1590		881	103	41	8	8	6	6071
1995	1648	415	774	1572		840	97	7	23	0	4	5380
1996	1559	497	783	1882		1892	80	25	19	0	6	6743
1997	724	250	512	401		291	42	6	3	0	3	2232
1998	680	220	478	632		312	42	15	14	0	3	2396
1999	852	247	535	599		367	56	6	3	0	4	2669
2000	847	219	548	549		299	52	9	16	0	5	2544
2001	1167	569	958	708		575	72	39	11	3	4	4106
2002	1036	367	772	783		731	57	20	3	0	4	3773
2003	1420	490	843	1059		739	135	20	22	0	6	4734
2004	1596	755	1020	1025		998	154	12	19	0	6	5585
2005	1481	754	1299	1347		813	122	26	54	0	7	5903
2006	1562	829	1159	1448		745	128	19	56	0	8	5954
2007	1437	520	1242	1375		696	101	10	36	6	12	5435
2008	941	501	920	1080		483	122	18	35	12	17	4129
2009	590	463	531	668		429	98	3	11	3	13	2809
2010	687	401	536	764		451	124	12	28	8	14	3025
average	1083	390	616	952	120	677	109	18	30	4	7	

Numbers reflect estimated harvest from entire Hunting District except for #170 which shows the actual 1% estimate.

Figure 8-1

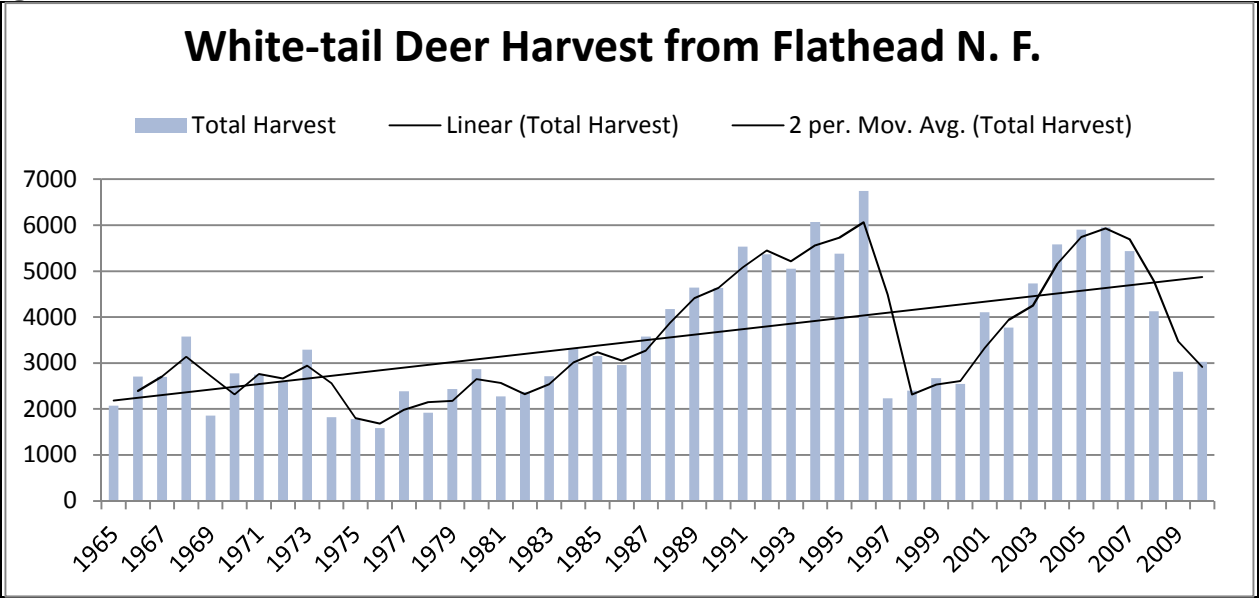
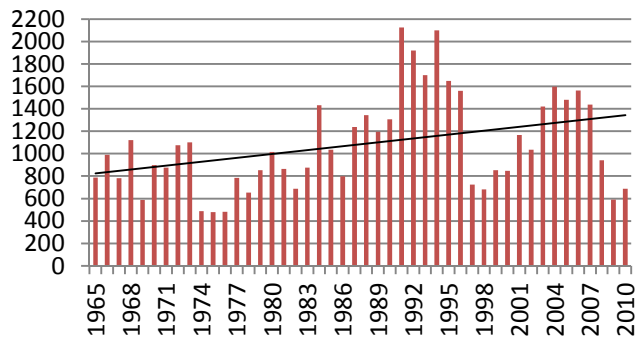


Figure 8-2

Figure 8-3

## WTD HD 102 Annual Harvest



## WTD HD 130 Annual Harvest

